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The Wisconsin Prototypic System of Reading Skill Development is described. The sequential arrangement of behavioral objectives in the word attack component is discussed. Basic linguistic concepts underlying the specification of these behavioral objectives are also considered. (Author)

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A CRITIQUE OF THE WORD ATTACK COMPONENT OF THE WISCONSIN DESIGN FOR READING SKILL DEVELOPMENT

Robert E. Rudegeair

The Wisconsin Prototypic System of Reading Skill Development has been under development since 1967. The system is described in a series of reporting documents from the Wisconsin Research and Development Center. (Otto et al., 1967; Otto, 1968; Ellison, 1969; Otto & Peterson, 1969; Otto, 1969; Davis, et al., 1969; Otto, 1970).

The System is intended to offer teachers a means of assessing the reading skill development of pupils in the elementary grades. It was conceived primarily as a tool for decision-making in the context of individually guided instruction. The intent was to devise prototypic components of reading skill development which could be adopted to meet the constraints imposed by a locally-devised comprehensive reading program.

Five components comprise the Prototypic System:

1) Outline of Reading Skills. The Outline is a lengthy listing of behavioral objectives for kindergarten through sixth grade reading instruction.

2) Guides to Individual Skill Observation. The Guides are individually administered assessment exercises which correspond to each of the objectives in the Outline. The interrelation between the Outline and these informal assessment procedures is the essence of the Wisconsin Prototypic System.

3) Individual Reading Skill Development Record. The Record is a file folder on which space is provided for designating mastery of each of the skills stated in the Outline. A skill development record for each pupil is kept from kindergarten through sixth grade.

4) Wisconsin Expanding Inventory of Reading Development. As the title does not suggest, this component consists of group assessment exercises referenced to each skill in the Outline. It is intended to serve as a gross measure of skill acquisition for initial placement in reading groups. Like the individual assessment tests, the group tests are referenced to each skill in the outline. The group tests are basically paper-and-pencil versions of the individual tests.

5) Compendium of Materials and Procedures. The Compendium is a list of materials available in conventional reading series for use in teaching the skills covered in the Outline. It is essentially a reference for the teacher who has made a diagnosis.

Only the first two components of the System are discussed in this paper. These are the core of the System while the latter components are logical adjuncts for anyone adopting the System. The first component, the Outline, is essentially a scope and sequence statement of the objectives of reading instruction encompassing kindergarten through sixth grade. Six Areas are distinguished in the outline:

I Word Attack Skills

II Comprehension Skills

III Study Skills

IV Self-Directed Reading

V Interpretive Reading

VI Creative Reading

Behavioral objectives are enumerated for five levels in each of the six Areas comprising the Outline. Labeled A, B, C, D, and E, these levels correspond roughly to kindergarten, first grade, second grade, third grade, and grades 4, 5, and 6 as a unit.

Comprising the second component, the Individual Assessment Exercises have been devised to correspond to each behavioral objective stated for areas I through III (Word Attack, Comprehension, and Study Skills). No provision for assessing areas IV through VI (Self-Directed, Interpretive, and Creative Reading) is made, since the skills outlined for these areas do not lend themselves to any standard assessment procedures. It is suggested that, in these areas, competence of individuals be judged opportunistically by prolonged observation and subjective evaluation by teachers and other relevant school personnel.

The authors take pains to point out what the System is not. It is not a comprehensive, self-contained, instructional system. It is not related to any one model of reading behavior. It is designed to serve the needs of school personnel working under diversified strategies of early reading instruction. The Outline as well as the Individual Assessment Exercises are not rigorous or dogmatic, they are prototypic or suggestive and intended to be modified to meet local needs. The Assessment Exercises are not the sole basis for making mastery/non-mastery decisions; they merely contribute to the decision which is dependent on teacher judgements as well.

THE OUTLINE OF READING SKILLS

One important contribution that the Prototypic System offers to teachers of reading is a comprehensive statement of the behavioral objectives to be attained in the elementary school years. This statement takes the form of an Outline of Reading Skills. While the Outline appears to be an important innovation in instructional design, it must be judged in the context of the instructional paradigm in which it is implicitly embedded.

> The Wisconsin Design represents a systematic attempt to (1) state explicitly an array of reading skills that, by long standing consensus, are essential for competence in reading. (2) assess individual pupils' skill development status by means of criterion referenced tests with respect to explicitly stated behaviors related to each skill, (3) provide a comprehensive management system to guide grouping for and planning of skill development instruction, and (4) monitor each pupil's progress in the development of specific skills. (Otto, 1970, p. iii)

In this context it is reasonable to expect program designers to exploit any possible prerequisite relations inherent among objectives en route to the terminal skill. The authors of the Prototypic System themselves refer to the outline as a statement of "hierarchically sequenced" objectives. Many forms of such sequencing can be imagined. A program might be structured such that the child is required, at one level, to detect occurrences of certain phonemes or phoneme sequences in spoken words so that such elements are available as responses to graphemes or grapheme strings at a higher level. Or the child might learn the sounds for individual graphemes at one level as a basis for learning sound correspondences for grapheme strings at a higher level. Or the child may be required to learn oral responses for monosyllabic bigrams and trigrams at one level and, at a higher level, be asked to recognize

occurrences of these elements in multisyllabic words. Any of these techniques represents an attempt to sequence learning from the simple to the more complex and in that sense is an attempt to exploit hypothesized hierarchical relationships.

In the published descriptions of the System, no attempt to exploit logical hierarchies or prerequisite relations among the component skills of reading is apparent. While the authors of the System employ such terms as "developmental", "sequenced", and "hierarchically arranged", the sense in which these terms are meant is obscure. Table 1 represents that portion of the Outline that enumerates the levels and constituent skills of the Word Attack area. The Outline of Reading Skills lists possible ingredients for a set of sequenced behaviors, but the authors make no attempt to define any structure in the sequence of skills they present. The levels in the Outline are arbitrary to the point of being useless. Constituent skills on higher levels are not built on mastery of constituent skills at lower levels in any meaningful sense. While this unrelatedness is not obvious from the list of skill labels in Table 1, it becomes apparent upon reading the descriptions of the behavioral objectives represented in the Outline.

For example, skill 5 in Level B, Phonic Analysis Skills: Consonant Blends, is described as follows: "The child is able to pronounce real and nonsense words that begin with the following blends: pl, gr, pr, cr, fl, cl, bl, gl." This skill requires some ability to pronounce words. Yet it is the first objective in the Outline that requires the child to respond orally to letter stimuli according to skill specifications

TABLE 1

CONSTITUENT SKILLS FOR THE FIVE LEVELS OF THE WORD ATTACK AREA AS LISTED IN THE OUTLINE OF READING SKILLS (Otto, 1970)

LEVEL A

1. Listens for Rhyming Elements: Words
2. Listens for Rhyming Elements: Phrases and Verses
3. Notices Likenesses and Differences: Pictures (Shapes)
4. Notices Likenesses and Differences: Letters and Numbers
5. Notices Likenesses and Differences: Words and Phrases
6. Distinguishes Colors
7. Listens for Initial Consonant Sounds

LEVEL B

1. Has a Sight Word Vocabulary of 50-100 Words
2. Follows Left-to-Right Sequence
3. Phonic Analysis Skills: Consonant Sounds: Beginning
4. Phonic Analysis Skills: Consonant Sounds: Ending
5. Phonic Analysis Skills: Consonant Blends
6. Phonic Analysis Skills: Rhyming Elements
7. Phonic Analysis Skills: Short Vowels
8. Phonic Analysis Skills: Simple Consonant Digraphs
9. Structural Analysis Skills: Compound Words
10. Structural Analysis Skills: Contractions
11. Structural Analysis Skills: Base Words and Endings
12. Structural Analysis Skills: Plurals
13. Structural Analysis Skills: Possessive Forms

LEVEL C

1. Has a Sight Word Vocabulary of 100-170 Words
2. Phonic Analysis Skills: Consonants and Their Variants
3. Phonic Analysis Skills: Consonant Blends
4. Phonic Analysis Skills: Vowel Sounds: Long Vowel

5a. Phonic Analysis Skills: Vowel Sounds: Vowel plus r

5b. Phonic Analysis Skills: Vowel Sounds: a plus l, a + w

6. Phonic Analysis Skills: Vowel Sounds: Diphthongs oi, oy, ou, ow, ew
7. Phonic Analysis Skills: Vowel Sounds: Long and Short oo
8. Phonic Analysis Skills: Vowel Generalizations: Short Vowel Generalization
9. Phonic Analysis Skills: Vowel Generalizations: Silent e Generalization
10. Phonic Analysis Skills: Vowel Generalizations: Two Vowels Together
11. Phonic Analysis Skills: Vowel Generalizations: Final Vowel
12. Phonic Analysis Skills: Common Consonant Digraphs

LEVEL C (con't)

13. Structural Analysis Skills: Base Words with Prefixes and Suffixes
14. Structural Analysis Skills: More Difficult Plural Forms
15. Distinguishes Among Homonyms, Synonyms, and Antonyms: Homonyms
16. Distinguishes Among Homonyms, Synonyms, and Antonyms: Synonyms and Antonyms
17. Has Independent and Varied Word Attack Skills
18. Chooses Appropriate Meaning of Multiple-Meaning Words

LEVEL D

1. Has a Sight Word Vocabulary of 170-240 Words
2. Phonic Analysis Skills: Three-Letter Consonant Blends
3. Phonic Analysis Skills: Simple Principles of Silent Letters
4. Structural Analysis Skills: Syllabication
5. Structural Analysis Skills: Accent
6. Structural Analysis Skills: The Schwa
7. Structural Analysis Skills: Possessive Forms

provided by Otto (1970). Little effort would be required to generate several skills that might logically precede this one in an ordered sequence. The written descriptions of the behavioral objectives represented by the labels in the Outline define a large number of skills for which reasonable foundation skills are not specified at other levels. Consider the objectives paraphrased in Table 2.

TABLE 2

BEHAVIORAL OBJECTIVES FROM THE PROTOTYPIC SYSTEM
THAT INVOLVE DECODING OF PRINTED WORDS

Behavioral Objective	Verbal Description
B5	Read a list of words initiated by consonant blends.
B10	Read a list of contractions and generate sentences containing them.
B11	Read a list of inflected verb forms and specify the root word.
B12	Read a list of words and indicate which are plural.
C2	Read a list of words containing variant pronounciations of s, c, and g.
C3	Read a list of words initiated by s plus consonant blends.
C4	Read a list of words that all contain long vowel pronounciations.
C5a	Read a list of words containing r-controlled vowels.
C5b	Read a list of words containing al or aw.
C6	Read a list of words containing oi, oy, ou, ow, ew.
C7	Read a list of words containing long and short oo.
C8	Read a list of words that end in single vowel plus final consonant.
C9	Read a list of words exemplifying the final e pattern.
C10	Read a list of words exemplifying occurrences of "two vowels together."
C11	Read a list of bigrams and trigrams ending in a vowel.
C14	Read a list of words exemplifying more difficult plural forms.
D3	Read a list of words exemplifying simple principles of silent letters.
D4	Read a list of words and syllabify them.
D5	Read a list of words and indicate the accented syllable.

Each of the objectives listed in Table 2 calls upon the child's abilities to decode unfamiliar words, since test words are not necessarily sight words. But objectives that might provide consonant decoding skills are found nowhere in the Outline except for the two objectives dealing with initial consonant blends (B5 and C3) and the one objective concerning variant sound correspondences s, c, and g (C2). While it is certain that the authors of the System expect that some Word Attack Skills are to be taught in the course of reading skill development, they have failed to specify any reasonably sufficient list of Word Attack objectives in their own Outline.

Such major omissions make it difficult to credit the System's description of skills as "sequenced." Other oddities of ordering emerge from a study of the selected objectives in Table 2. The word pronouncing objectives that are contained in the Outline appear peculiarly out of sequence. Children are expected to read lists of contractions, inflected verb forms and regular plural forms at Level B, but it is not until Level C that outcomes specific to vowel pronunciations are introduced.

Gaps also exist in the System's skill inventory with respect to basic skills shared by almost all reading programs, e.g., letter naming. The absence of letter-naming is another example of internal inconsistency in the System since several assessment tasks for skill outcomes call for a letter-naming response. While the Outline is intended as a "broadly-based" skills inventory, the absence of skills and skill sequences typical of phonics programs (synthetic approaches) is troublesome. Sounding out skills and blending skills are reflected in the

behavioral objectives of almost every phonics Word Attack component (see Aukerman, 1971, for a review of beginning reading programs), but such skills are not treated in the prototype Outline.

In contrast to the apparent omissions, there are objectives specified that appear superfluous in a list of developmental reading skills. Among these are Skill 6 of Level A which requires color matching and Skill 6 of Level D which represents a separate treatment of "schwa," defined in the Prototypic System as the unaccented occurrence of the vowel sound /ə/. This latter skill is curious in that only one vowel was selected to represent the content domain. But even if the skill were defined in terms of 14 or 15 other vowel sounds, the bearing of the objective to reading behavior would remain obscure.

In sum, the outline is a weakly-organized list of items from the folklore of skills involved in early reading training. Or, to phrase the proposition differently, the "skills" are not derived from any specific theory regarding the nature of reading acquisition. The authors regard this characteristic as a strength because it offers some flexibility to those who adopt the System. However, it may also be viewed as a serious weakness, since it reflects a failure to exploit the logical relations that do hold among the concepts and rules acquired in the early stages of learning to read.

INDIVIDUAL ASSESSMENT TASKS

An individual assessment task is provided for each of the skills listed in the Outline. One of the important ostensible contributions of the Prototypic System is its emphasis on continual monitoring of skill development throughout the instructional sequence. However, skill assessment is a complicated endeavor and, to be effective, it demands careful planning and strict control over relevant variables. In general, skills and tasks are not distinguished in the published reports that describe the Prototypic System. While skill assessment is the goal, naturally, it must take place in the context of some task which will always involve variables extraneous to the skill in question. In the context of the Prototypic System, or any diagnostic test battery, assessment tasks are valid only insofar as they tap the skill at issue.

While many of the tasks designed for the Prototypic System are straightforward, others appear to present methodological as well as substantive problems. As mentioned earlier, some tasks call for letter-naming but letter-naming is not a behavioral objective earlier (or later) in the sequence of skills. Since it can be assumed that letter-naming is taught in any case, this problem is not as serious as one where variables are confounded. For example, there is a consistent failure in the System to distinguish spelling-to-sound rules from sound-to-spelling rules, yet there are regularities operating in one direction that are not reflected in the other.

For example, in Level B, the behavioral objective for Skill 8 (Phonic Analysis Skills: simple consonant digraphs) is defined as follows: "The child is able to identify simple two-consonant combinations--ch, th, sh--

that result in a single new sound. The child is asked to identify the digraphs (i.e., two consonants with a single sound) in words enunciated by the teacher: she, chall, teeth, fish, and beach". (Otto, 1970, p. 26). The child receives no visual stimulus in the task designated to assess mastery of this objective. The child is expected to a) retreive the spelling of the word uttered by the teacher and b) identify the digraph. If the child fails to respond correctly, what skill does he lack? The same sort of confounding described for the test of skill B8 is found in the assessment tasks for the following skills:

B7. The child is required to say the name of the letter that corresponds to the short vowel sound in a word spoken by the teacher.

C3. The child is required to say what two letters make the beginning blend of words pronounced by the teacher.

C5a. The child is required to say what vowel precedes the r in words pronounced by the teacher.

C5b. The child is required to say whether he hears al or aw in nonsense syllables pronounced by the teacher.

C6. The child is required to say which two vowels make the single sound in each of a list of nonsense words pronounced by the teacher.

C12. The child is required to say which two consonants make the single consonant sound in each of a list of real and nonsense words pronounced by the teacher.

In each of the tasks listed above, the child is required, on the basis of a spoken stimulus, to answer a question about the spelling pattern of the word at issue. From these tasks, it is impossible to say whether or not the child can decode letters accurately. Yet letter-to-sound learning is without question the principal issue. Those who would rely on tasks such as these to make judgments about "phonic analysis" abilities of children reveal a poor understanding of methodological as well as linguistic variables.

Further effects of poor understanding at the phonic level appear in certain other assessment tasks. In one such task (C12 common consonant digraphs), Ss are required to tell the teacher what consonant digraph (two letters that map to one consonant sound, e.g., sh → /š/) occurs in the words she reads to them. The first word read by the teacher is sink and the "correct answer" expected from the child is nk. Yet nk is no more an example of a consonant digraph (in this task) than the rk of chork, another item on this list. Happily, the rk response is not expected. An accidental slip would be understandable, but the nk response is called for three times in a list of 14 words.

In another task (D3 simple principles of silent letters), Ss demonstrate their knowledge of silent letters by reading a list of words and indicating to the teacher which letters in the spelling of the words are silent. The a in eat, the i in sail, the t in witch, and the u in four are all expected from the child as correct responses. While some educators may choose to view these elements as silent letters, it seems a poor approach to teaching spelling-to-sound patterns. It seems much more productive to view the elements in the examples as constituents of vowel digraphs and a consonant trigraph. These units are similar to consonant digraphs which are acceptable units in the System.

In the task designed to assess Skill D6 (structural analysis skills: The schwa) the child is required to identify the syllables in known words that contain a schwa ("The short-u sound"). The word puppy is offered as an example of a word that contains a short-u sound but not a schwa--because the sound in question occurs in the accented syllable. What

possible end is served by having the child distinguish between unaccented and accented schwa sounds is a mystery. The diagnostic value of this task must be questioned too since, in it, the factors of stress and vowel quality are confounded.

The large number of problematic assessment tasks impugns the value of the diagnostic component of the Prototypic System. The System's authors claim that employment of the Individual Assessment Exercises will put teachers in the best position to "...choose the instructional approach they would take with individuals rather than to have the approach dictated by an instructional system far removed from local realities" (Otto, 1969, p. 2). Yet if the teacher decides to use the assessment paradigm as a teaching model, he will find in many cases that the object of the lesson involves confounded variables, erroneous information, and simple inefficiency.

While the direction taken in the design of the Prototypic System, toward stating objectives and assessing skill development, represents a possible improvement in instructional design, the major shortcomings of the System render its value dubious. It is described by its authors as a developing system, subject to future modifications, but the impression is also conveyed[1] that it has already undergone major

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[1]The Word Attack components critiqued in the present paper represent revisions as of August, 1970. The same document (WP#41) was reprinted--unchanged--in June of 1971.

modifications to the point where it is presently marketable. This seems an unfortunate claim since rejection of the Prototypic System may generate a backlash against instructional management systems of any sort.

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